

REMARKS

Claims 10 and 13-27 are pending with claims 10 and 21 being independent. The Office Action acknowledges that dependent claims 13-14 and 22-26 contain allowable subject matter, but maintains the rejections to the independent claims as allegedly being obvious over "Closed Cycle Lasing of ASE Noise in a WDM Ring Network," (hereinafter, Saleheen) in view of WO 02/080409 (hereinafter, "Caprino") and U.S. Pat. No. 7,019,894 (hereinafter, "Stentz"). Respectfully, the rejections are based on a collection of separate teachings sewn together using improper hindsight reconstruction. Given the disclosures of the cited references, no one skilled in the art would have a reason to modify one of the references to include the teachings of another.

The claims are directed to an improved optical network (i.e., claim 10) and corresponding apparatus (i.e., claim 21) that re-circulate Amplified Spontaneous Emission (ASE) noise to control the optical amplifier gain. The claimed invention maintains stable operation, even with changes in channel numbers such as when a fiber breaks or is restored, by monitoring an ASE lasing peak and switching amplifier. Particularly, to maintain a gain substantially at a level provided by the optical amplifiers prior to the detected loss, the claimed invention employs detector circuitry that switches the optical amplifiers in the ring network to a gain control mode after detecting a loss of a lasing peak.

Saleheen discloses lasing of ASE noise in a WDM ring network using variable optical attenuators (VOA), during normal operation. The VOAs prevent the uncontrolled signal and noise buildup that otherwise occurs in closed loop networks. Dropping channels in the network initially reduces ASE noise; however, Saleheen discloses that "ASE noise gradually builds up due to the noise concatenation at the EDFA's." p. 11-559, left column, ¶ 3, until it eventually clips, e.g., on the third iteration around the loop. p. 11-559, left column, ¶ 4. Saleheen discloses that the ASE noise builds up even in dropped channels. The ASE noise is present – and builds

naturally to a clipping point – during normal operation, for both dropped channels and channels that are not dropped.

Caprino discloses a method for allowing traffic channels added to a span to survive a break upstream of the added channels. p. 1, ll. 5-8. As is known in the art, changing the number of channels amplified by an optical amplifier could undesirably affect the amplifier gain. Therefore, Caprino discloses maintaining amplifier gain for those added channels despite the loss of channels upstream of the break in the fiber. To accomplish this, Caprino teaches amplifying ASE noise to compensate for the lost channels. p. 3, ll. 15-29. Thus, Caprino teaches amplifying ASE noise only when an upstream break is detected.

Saleheen teaches that an ASE lasing peak is employed during normal operations. During normal operations, Caprino teaches minimizing ASE noise, and amplifying the ASE noise only when there is an upstream fiber break. The references thus teach contradictory uses of ASE lasing, at different times. No one skilled in the art would combine Saleheen with Caprino due to their contradictory teachings regarding the injection and amplification of ASE noise. The references are simply incompatible.

Stentz fails to remedy the incompatibility of Saleheen and Caprino. Stentz discloses a method and apparatus for automatically controlling the gain of an optical amplifier. More particularly, Stentz discloses establishing a set point for ASE power within a given wavelength range generated by an optical amplifier. The set point is used in a feedback loop. During operation, the ASE set point is compared against a measured ASE power, and then continuously adjusted based on the changes in signal input power. col. 3, ln. 62 – col. 4, ln. 2.

Stentz does not teach or suggest using a loss of a lasing peak to control the gain mode of an amplifier. Stentz only discloses utilizing ASE as part of a feedback system in which the same gain mode is maintained. In Stentz, an ASE channel is used to control amplifier gain by adjusting the pump power to maintain the ASE power at the set point. However, Stentz does not

teach or suggest how the loss of the lasing peak is handled. In fact, since Saleheen teaches that a lost lasing peak recovers gradually, one of skill in the art would have no reason to even consider the problem of a lost ASE lasing peak. Accordingly, the further combination with Stentz is also improper.

It is well-settled that the Office bears the initial burden of factually supporting a *prima facie* case of unpatentability. *In re Oetiker*, (977 F.2d 1443, 1445 (Fed. Cir. 1992)). The Office cannot satisfy that burden by combining separate elements of unrelated disclosures, using only impermissible hindsight reconstruction in order to piece together a rejection. “A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). “We must still be careful not to allow hindsight reconstruction of references to reach the claimed invention without any explanation as to how or why the references would be combined to produce the claimed invention.” *Innogenetics, N.V v. Abbott Laboratories*, 512 F.3d 1363 (Fed. Cir. 2008).

None of the cited references, alone or in combination, teaches or suggests the claimed invention. Saleheen and Caprino teach incompatible uses of ASE noise, and cannot be combined. Stentz simply confirms Saleheen’s teaching that the loss of a channel may be accompanied by an existing ASE lasing peak. Thus, there is no reason for one skilled in the art to look to Stentz to modify Saleheen. Accordingly, the Office has failed to establish a *prima facie* case of obviousness, and the § 103 rejection of claim 10 is improper and must be withdrawn.

Claim 21 is a method claim corresponding to the apparatus of claim 10. Claim 21 is directed to an optical amplifier and contains language similar to that of claim 10. Therefore, claim 21, and its dependent claims, are non-obvious over the cited art for at least the reasons stated above.

In addition to the foregoing, the Office Action also indicates that claims 15-19 stand rejected as being obvious over Saleheen in view of Caprino and Stentz, and in further view of U.S. Pat. No. 5,969,840 (hereinafter, "Roberts"). However, these claims depend from claim 10, which for the reasons stated above, is allowable over the cited art. Therefore, they, too, are non-obvious over the cited art. Further, Roberts does not remedy the deficiencies of the cited art.

Accordingly, in light of the foregoing remarks, none of the references, alone or in combination, teaches or suggests the claims. Applicant therefore respectfully requests that the Office withdraw all rejections and issue a Notice of Allowance for all pending claims.

Respectfully submitted,
COATS & BENNETT, P.L.L.C.


Edward H. Green, III
Registration No.: 42,604

Dated: June 7, 2011

1400 Crescent Green, Suite 300
Cary, NC 27518

Telephone: (919) 854-1844
Facsimile: (919) 854-2084